REMARKS:

Claims 1, 2, 4 –11, 13 and 17-21 are pending and stand rejected.

Claims 1 has been amended to include as a part of the copolymer the nitroxide residue units that are present when a nitroxide, or alkoxyamine are used as the agent for controlling the polymerization of the gradient polymer. These nitroxide residues remain on the terminal end(s) of the copolymer chain. This amendment is supported by original claim 8, and also by page 7, line 27 to page 9, line 2 of the Substitute specification.

Claim 7 has been amended to include the limitations of claim 8. Claim 8 has been cancelled without prejudice.

It is believed that no new matter has been added by the amendments.

35 U.S.C. §§ 102 and103(a)

Claims 1, 2, 4-10, 13, and 17-20 and 21 stand rejected under 35 U.S.C. §103(a) as being unpatentable as obvious over Nesvadba et al. (U.S. Patent 6,262,206). The Nesvadba reference fails to teach or suggest all of Applicant's claim limitations, thus fails to provide a *prima facie* case of obviousness. Specifically, the Nesvadba reference fails to teach or suggest Applicant's specific COMBINATION of gradient copolymer, monomer % and Tgs; and where the copolymer is soluble or dispersible in both water and in organic solvents.

The Examiner points to the Nesvadba reference of polymerizing the monomers in the presence of an organic solvent or in the presence of water, or in mixtures of organic solvents and water (Col. 9, lines 62-64) and cites this of evidence of Applicant's claimed water and organic solvent solubility. In the next sentence, the Nesvadba reference further points to the use of cosolvents or surfactants. (Col. 9, lines 64-67). It is well-known in the art that water insoluble polymers may be made by aqueous emulsion processes. The fact that one can make a polymer in water, does not mean the polymer is soluble in water. The Nesvadba reference does not teach or describe a Gradient Polymer soluble in water or organic solvent.

The Examiner further contends that the water/organic solvent solubility would be an inherent property, since the Nesvadba reference lists substantially identical monomers with substantially the same number average molecular weights and polydispersity – and even mentions "gradient" once in a laundry list of copolymer types in Column 12, line 57.

Applicant admits that the water/organic solubility is an inherent property of the specific gradient copolymer composition claimed by Applicant by Tg, wt%, hydrophilicity (and %), molecular weight and polydispersity. Applicant's claimed specific compositional set is not taught or suggested by the Nesvadba reference.

Each of the individual elements and limitations of Applicant's claims (except for dual water/organic solvent solubility) can be found buried among many other elements and limitations in the '206 reference. The structures listed include homopolymers, random copolymers, block, star and gradient copolymers (Col. 12, lines 56-58). The polymers can be made from a wide array of ethylenically unsaturated monomers, including some that would produce homopolymers with Tgs of both below and above 20°C.

None of the Nesvadba Examples exemplify Applicant's claimed copolymer (meaning all of the examples teach away from Applicant's claims

Every element of a claimed invention may often be found in the prior art. However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by applicant. *In re Kotzab,* 55 U.S.P. Q.2d 1313, 1316 (Fed. Cir. 2000) (citations omitted).

The main point of difference between Applicant's claims and the art is that Applicant's unique copolymer has both water and organic solvent solubility. This dual solubility was not known or expected from the art, and could certainly not have been predicted.

Applicant's invention relates to the field of amphiphilic gradient copolymers that are soluble in water as well as in organic solvents. (Specification, page 1, lines 13-15). Since the solubility of a copolymer in water and solvent was not recognized as a result to achieve in the '206 patent, the composition could not be optimized through routine experimentation to obtain such a result. The Examiner contends that the weight ratio of Components A and B is a result effective variable that can be optimized by one of skill in the art. Applicant disagrees. While the ratio of A to B can certainly be varied, there is no teaching or suggestion in the '206 reference to obtain a gradient copolymer with solubility in both water and organic solvents. Thus there is no motivation in the '206 patent to optimize the composition to obtain

Applicant's results, and indeed Applicant's dual solubility copolymer could not be predicted from the cited art.

The Nesvadba reference teaches uses of polymers that could be either water-based or solvent based. The large list of monomers and ratios in Nesvadba could allow for the synthesis of a polymer or copolymer having solubility in either water or an organic solvent. There is no teaching or suggestion in the Nesvadba reference of a dual solubility copolymer, nor would one be expected from the Nesvadba teaching. Applicant's claimed copolymers having dual solubility could not be predicted from Nesvadba, and have a performance not expected.

Matyjaszewski

Claims 1, 2, 4, 6-7, 18 and 20 stand rejected under 35 U.S.C. §103(a) as being anticipated by Matyjaszewski et al. J. Phys. Org. Chem. , 2000, 13, p. 775-786. The Matyjaszewski refrence fails to teach or suggest all of Applicant's claim elements, thus fails to provide a *prima facie* case of anticipation. Specifically, the Matyjaszewski reference fails to teach or suggest that the copolymer have both the claimed Tg and wt%, as well as one monomer being hydrophilic; nor that the resulting copolymer is soluble or dispersible in both water and organic solvent. Moreover, the Nesvadba reference fails to teach or suggest a gradient copolymer having residual nitroxide groups in the copolymer as in Applicant's amended claims.

The Matyjaszewski reference does show gradient copolymers – including the styrene acrylonitrile example on page 783, Figure 3. However, neither styrene nor acrylonitrile is a hydrophilic monomer, thus fails to meet that claim element.

Further, the Matyjaszewski reference does not teach or suggest a copolymer that is soluble in both water and an organic solvent.

The Matyjaszewski reference describes the formation of copolymers using Atom Transfer Radical Polymerization (ATRP) copolymerization. This process "proceeds by reversible insertion with regard to an organometallic complex in a bond of carbon-halogen type." As described in the present application on page 1, lines 17-19. Thus Applicant's copolymers are halogen-free, while the Matyjaszewski copolymers contain halogen residues at the chain extremities that can effect the chemical and physical properties of the copolymer.

In view of the above, the Applicant believes that the reasons for rejection have been overcome, and the claims herein should be allowable to the Applicant. Accordingly, reconsideration and allowance are requested.

Respectfully submitted;

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